

ISAC Meeting – May 2012

ACTION OR INFORMATION ITEM

SPONSOR (Name/Email): Stas Burgiel, stas_burgiel@ios.doi.gov, on behalf of the ISAC Prevention Sub-committee; Peter Alpert / palpert@bio.umass.edu

TOPIC: Emerging vectors of biological invasions in the electronic commerce era

SPEAKER (Name/Email): Julian Olden, University of Washington / olden@uw.edu; and Dr. Angela Strecker, Portland State Univ. / strecker@pdx.edu

1. DESCRIPTION OF AGENDA ITEM:

As Dr. Olden will show, trade has long been recognized as a primary pathway for biological invasions, but the voluminous, geographically widespread and shifting dynamics of electronic commerce pose an emerging challenge to NISC's strategic goal to "prevent introduction and establishment of invasive species to reduce their impact on the environment, economy and health of the United States". With growing communication technologies and consumer demand, recent decades have witnessed a surge in global trade linked to Internet sales (e.g., nursery plants, aquarium fishes) involving novel invasive species from both established and emerging trading partners. These trends will continue to shift as climate change influences supply-and-demand patterns and as we enter the next evolution of online shopping: social commerce. Using lessons from horticulture trade, pet and aquarium trade and live seafood trade, this presentation will highlight the challenges of invasive species management associated with electronic commerce and explore opportunities for improving the nation's prevention capacities in a changing climate. The aquarium trade moves thousands of species around the globe, and unwanted organisms may be released into freshwater ecosystems, with adverse ecological and economic effects. In her portion of the presentation, Dr. Strecker will present results from the first investigation of the ornamental pet trade as an invasion pathway in the Pacific Northwest Region of the United States, where a moderate climate and a large human population present ample opportunities for the introduction and establishment of aquarium trade species. Results from a survey of pet stores found that the number of fish and plant species currently in the aquarium trade is vast, many of which are considered to pose an ecological threat to native ecosystems. Further, propagule pressure is likely to be substantial, and the moderate climate may potentially enhance establishment of species. Dr. Strecker will close with recommendations for enhanced public education programs, greater regulation of the aquarium industry, and improved legislation of non-native species in the ornamental trade.

2. WHY IS THIS ITEM IMPORTANT TO NISC / ISAC? HOW IS IT RELATED TO THE NATIONAL INVASIVE SPECIES MANAGEMENT PLAN?

This item is highly relevant to the focus of the May 2012 meeting on invasive species in the Pacific Northwest and also to the focus on commerce being carried over from the December 2011 meeting. Understanding how the aquarium trade vectors invasive aquatic species is important to NISC and ISAC because the trade is a major vector and aquatic invasives include some of the most widespread and economically injurious introduced species in the U.S. Discussion of the aquarium and horticultural trades relate directly to the work of the ISAC Prevention Sub-committee's work, particularly that on e-commerce. The item falls under Implementation Tasks P.3.2 and P.3.5 and Objective EDRR.1 in the National Invasive Species Management Plan.

3. PREVIOUS ACTIONS TAKEN BY NISC / ISAC ON THIS ITEM:

This presentation would build on the special half-day e-commerce session held during the December 2011 ISAC meeting, as well as previous discussions around major pathways for introduction. The climate change linkage is also pertinent to past work on ISAC white papers and present joint efforts by ANSTF/NISC to look at availability of and gaps in management guidance around the interlinkages between invasive species and climate change.

4. ACTION REQUESTED OF NISC / ISAC:

Potential consideration of recommendations.

5. ALTERNATIVES:

None.

6. ATTACHMENTS: None

Relevant publications:

Diez, J.M., D'Antonio, C.M., Dukes, J.S., Grosholz, E.D., Olden, J.D., Sorte, C.J.B., Blumenthal, D.M., Bradley, B.A., Early, R., Ibáñez, I., Jones, S.J., Lawler, J.J., and L.P. Miller. In press. Will extreme climatic events facilitate biological invasions? *Frontiers in Ecology and the Environment*.

Bradley, B.A., Blumenthal, D.M., Early, R.I., Grosholz, E.D., Lawler, J.J., Miller, L.P., Sorte, C.J.B., D'Antonio, C.M., Diez, J.M., Dukes, J.S., Ibanez, I. and J.D. Olden. 2012. Global change, global trade, and the next wave of plant invasions. *Frontiers in Ecology and the Environment* 10: 20-28.

Strecker, A.L., Campbell, P.M. and J. D. Olden. 2011. The aquarium trade as an invasion pathway in the Pacific Northwest. *Fisheries* 36:74-85.

Vander Zanden, M.J. and J.D. Olden. 2008. A management framework for preventing the secondary spread of aquatic invasive species. *Canadian Journal of Fisheries and Aquatic Science* 65: 1512-1522.

Rahel, F.J. and J.D. Olden. 2008. Assessing the effects of climate change on aquatic invasive species. *Conservation Biology* 22: 521-533.

Lee, H., Reusser, D.A., Olden, J.D., Smith, S.S., Graham, J., Burkett, V., Dukes, J.S., Piorkowski, R.J., and J. McPhedran. 2008. Establishing integrated monitoring and information systems for predicting and managing aquatic invasive species in a changing climate. *Conservation Biology* 22: 575-584.